

REMARKS

Claims 1, 2, 4-5, 7 and 9 are pending in this application. The Office Action rejects claims 1-9 under 35 U.S.C. §103(a). Applicants respectfully traverse the rejection.

The courtesies extended to Applicants' representative by Examiner Solola at the interview held November 20, 2008, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' record of the interview.

I. Rejection under 35 U.S.C. §103(a)

Claims 1-9 are rejected under 35 U.S.C. §103(a) as having been obvious over Hiroko (JP 05-078289). Applicants respectfully traverse the rejection.

Applicants respectfully submit that the teachings of Hiroko would not have rendered obvious the presently claimed method because (1) the compounds of Hiroko are not analogous starting materials, and (2) the presently claimed invention provides highly unexpected results.

First, Applicants respectfully submit that the compounds taught by Hiroko, which include only benzene and naphthalene rings, are not analogous to the presently claimed formula (1), which contains a benzopyran ring. Under MPEP 2144.09(V), "the presumption of obviousness based on a reference disclosing structurally similar compounds may be overcome where there is evidence showing there is *no reasonable expectation of similar properties*" (emphasis added). Applicants respectfully submit that a person having ordinary skill in the art of chemistry would not have expected the benzopyran compound of formula (1) to have similar properties as the compounds taught by Hiroko. Generally, benzene's aromatic bonds are widely known in the art of chemistry to be stable, while the olefin (i.e. double) bond in the benzopyran compound is known to be much more reactive.

More specifically, benzopyran compounds such as formula (1) are widely known in the art as easily undergoing reduction at the olefin bond. See the present specification at, for example, paragraphs [0002], [0003] and [0046]. In particular, reduction of the olefin bond results in the production of undesirable by-product having formula (5). See the present specification at page 8. Thereby, a person having ordinary skill in the art *would have expected* that the olefin bond would undergo reduction during a method that reduces another group within the compound (i.e. the NO₂ group). In contrast, a person having ordinary skill in the art would *not* have expected the aromatic bonds in the compounds taught by Hiroko to undergo reduction in such a method, because aromatic bonds are known to be much more stable. Therefore, a person having ordinary skill in the art would have had *no reasonable expectation of similar properties* as between the presently claimed formula (1) and the compounds taught by Hiroko.

The Office Action alleges that "there is no evidence in the specification or the prior arts that any part of the starting reagents other than NO₂ is involved in the reaction process." Applicants do not necessarily disagree with this statement on its face. As is discussed throughout the present specification, *only* the NO₂ in the presently claimed compound of formula (1) undergoes reduction. The olefin bond does not undergo reduction. However, *this does not mean that the benzopyran compound is merely analogous to any compound that does not react under these conditions*. Instead, Applicants respectfully submit that the fact that the olefin bond in the benzopyran *does not undergo reduction* was highly unexpected, because various other methods involving benzopyran *do* cause the olefin bond to be reduced. In this way, *no reasonable expectation of similar properties* exists if a person having ordinary skill in the art would have expected the olefin bond to be reduced, even if in fact the present inventors discovered that (under certain conditions) the olefin bond is *not* reduced.

Furthermore, Applicants respectfully submit that the Office Action's reliance on *In re Durden*, 226 USPQ 359 (Fed. Cir. 1985) is misplaced. *In re Durden* decided the question of "whether a chemical process, otherwise obvious, is patentable *because* either or both the specific starting material employed and the product obtained are novel and unobvious," (emphasis in original). The Federal Circuit found that such a process is not patentable. However, the situation in *In re Durden* is entirely different from the presently claimed invention. In the presently claimed invention, there is *no* allegation that either the starting reagent or the ending product are novel or unobvious. Instead, Applicants respectfully submit that the presently claimed invention is unobvious because the starting materials are *not* analogous (based on their *expected* different reactivities), and a person having ordinary skill in the art would not have expected the chemical process to proceed in the manner as claimed. Therefore, this case is not applicable to the present situation or the presently claimed invention.

Additionally, Applicants respectfully submit that the presently claimed invention displays highly unexpected results. Under MPEP 2144.09(VII), "A *prima facie* case of obviousness based on structural similarity is rebuttable by proof that the claimed compounds possess unexpectedly advantageous or superior properties," although this section references "compounds," such a showing is clearly also applicable to method claims.

Specifically, the presently claimed method wherein platinum or palladium is used as a metal catalyst provides unexpected results of superior selectivity with respect to the olefin bond, such that by-product (5) is not formed. See the present specification at, for example, page 8, Table 1, and paragraph [0046]. Specifically, paragraph [0046] shows that reduction with FeCl₃ results in much higher amounts of (5) as compared to the presently claimed invention. These results are unexpected over Hiroko *because Hiroko teaches that all of the catalysts taught therein are interchangeable*. Hiroko nowhere teaches or suggests that any

particular catalyst would achieve any different results, because the reactant compounds of Hiroko are very different (as discussed above) such that they would not undergo the reduction reaction to form a by-product such as formula (5) (i.e. because, again, the compounds taught by Hiroko do not contain olefin bonds). The unexpected results shown by the presently claimed invention are therefore neither applicable to Hiroko nor taught therein.

Accordingly, independent claim 1 would not have been obvious over Hiroko for at least the reasons discussed above. Dependent claims 2, 4-5, 7 and 9 therefore also would not have been obvious for at least the reason that independent claim 1 would not have been obvious.

Reconsideration and withdrawal of the rejection are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:STD/std

Attachment:
Petition for Extension of Time

Date: December 15, 2008

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